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THE PLANT DISEASE REPORTER

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration of discussion rahter than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

IN THIS ISSUE

Phytophthora canker has been found on madrone in a restricted location in California, according to Willis W. Wagener and Marion S. Cave, page - 328.

Relative freedom of Ohio hybrid seed corn from disease-producing fungi during the past 2 years is indicated by results of studies reported by M. R. Harris, page - 329.

Reports on diseases of cereal crops, page - 336.

Diseases reported on leguminous forage and cover crops, page - 337.

A gratifying decrease in prevalence of the wheat nematode in a Georgia area followed the initiation of control efforts by the County Agent, according to A. L. Taylor, reporting results of the nematode survey in Georgia, page - 338.

Results of a survey reported by C. F. Taylor indicate that the meadow nematode may be generally distributed in Virginia, page - 339.

Surveys of vegetable plants in greenhouses are reported from West Virginia by C. F. Taylor, page - 340, by R. A. Hyre for Kentucky, and E. W. Bodine for Colorado.

Reports on late blight and other diseases of potato and tomato, page - 342.

Diseases of other vegetables in varibus-truck crop areas, page - 344.

R. C. Cassell lists some fruit and vegetable diseases encountered on the Boston market, page - 347.

Reports on potato storage diseases, page - 348.

Development of the apple scab and cedar rust fungi in New York and West Virginia, respectively, are reported, page - 350.

Some reports on diseases of ornamentals, page - 351.

Among brief notes, page - 351, Leland Shanor reports a second occurrence of root rot of spinach caused by Phytophthora megasperma; and George E. Altstatt reports on condition of cotton in the Texas Coastal Bend area, page - 352.

March weather - page 352.

PHYTOPHTHORA CANKER OF MADRONE IN CALIFORNIA

Willis W. Wagener and Marion S. Cave

Early in August, 1943, Mr. L. G. Lageson, Agricultural Commissioner for Nevada County, California, in company with Mr. Gilbert L. Stout, Associate Pathologist, California State Department of Agriculture, called to the attention of the senior writer a decline and dying of native Pacific madrones (Arbutus menziesii Pursh) on a wooded property in the vicinity of Grass Valley, California.

Much of the base of the affected trees was found to be dead, with bluntly wedge-shaped extensions of the dead area up the trunk. Several trees had died and had been removed. The crowns of those still alive showed varying degrees of distress, usually more pronounced on the branches of one side of the tree than on those of the other, and ranging from killed limbs with the dead foliage still hanging on to foliage only a little thinner and more reduced in size than normal.

A fungus isolated from margins of the dead areas was found to be a Phytophthora, agreeing with one described recently by Stuntz and Seliskar[1] as the inducing agent of a destructive canker of dogwood and madrone in the State of Washington, and identified by them as Phytophthora cactorum (Leb. & Cohn) Schroet. This, and the similarity in the characteristics of the disease at the Grass Valley location to those described by the above authors, leaves little doubt as to their common identity.

On reexamination in November the cankers on the diseased trees near Grass Valley were found to show no evidences of activity at the margins and attempts at isolation were unsuccessful. Apparently, under our conditions, the disease becomes quiescent during the fall months.

While all of the affected trees are part of the natural growth of the area, there has been considerable disturbance of the soil around them by human activities in the past, and part of the trees are in a yard that receives irrigation during the summer. However, no specific correlation between irrigation or indications of past soil disturbance and disease incidence is evident. There is likewise no evident clue as to possible introduction of the disease into the limited area in which it has been found.

DIVISION OF FOREST PATHOLOGY, BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING, AGRICULTURAL RESEARCH ADMINISTRATION, UNITED STATES DEPARTMENT OF AGRICULTURE, SAN FRANCISCO, CALIFORNIA

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[1] Stuntz, D. E., and Seliskar, C. E. A stem canker of dogwood and madrona. Mycologia 35:207-221. 1943.

A STUDY OF FUNGI PARASITIC ON OHIO SEED CORN

M. R. Harris

During the early months of each year the Ohio Seed Improvement Association makes germination tests of a large number of corn samples taken by official inspectors from growers of certified seed within the State. During the 1943-44 season most of the samples were of the 1943 crop but there were also samples of the 1942 crop and a few prior to that year. While most of the samples were hybrids, quite a large number of inbred and single-cross strains were tested for their ability to germinate. The corn seeds were placed over wet paper towel material laid over heavy butcher paper and rolled into a compact bundle. Each sample consisted of 100 seeds. The paper roll was stood upright in a moist box for several days and kept wet enough to insure proper germination. After several days when the corn sprouts had grown to be from 1 to 3 or 4 inches long, the roll was removed from the germinator, unrolled, and a count made of the number of seeds having strong vigorous sprouts, weak sprouts, and those failing to germinate. While in the moist box the corn seeds were in an ideal habitat for the development of any fungi that might be present. It was with this in mind that the samples were examined when germination data were taken. Records were made of the number of seeds in each sample showing a fungus infection. The fungi listed were Aspergillus sp., Nigrospora sphaerica, Diplodia zeae, Fusarium moniliforme, Gibberella saubinetii [G. zeae] and Penicillium sp. Occasionally other species were noted but none occurred often enough to warrant inclusion in these data.

The fungi found on germinating corn are described in a number of publications. Koehler and Holbert[1] probably give as accurate a description of the growth on corn seeds of these fungi as can be found, and their illustrations are a valuable aid in diagnosing species found on germinating corn samples. This publication was used as a guide in recording the data in this paper.

In general, the corn seeds examined during this study were as illustrated by Koehler and Holbert in the expression of growth of the various parasitic fungi that developed in the germinator. However, Penicillium sp. was very much more prevalent than other fungi. This is believed due to the relatively high temperatures, at times, of the germinating boxes (85 to 90° F.) which is thought to favor the growth of Penicillium sp.

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[1] Koehler, Benjamin and J. R. Holbert. Corn diseases in Illinois, their extent, nature and control. Illinois Agr. Exp. Stat. Bull. 354. 1930.

The hybrid corn strains examined were from several sources and are here listed together with their pedigrees.

Table 1. Hybrid corn strains examined on germination.

Strain		Pedigree
Iowa 306	-	(WF9 x Os420) x (L289 x I205)
Iowa 939	-	(L289 x I205) x (Os420 x Os426)
Iowa 4059	-	(WF9 x Hy) x (L289 x I205)
Illinois 384	-	(A x Hy) x (WF9 x R4)
Indiana 425B	-	(WF9 x Hy) x (A x 90)
Indiana 431	-	(WF9 x Hy) x (Os420 x Os426)
Indiana 608C	-	(WF9 x Hy) x (A x Tr)
Indiana 610	-	(A x L) x (WF9 x Hy)
Ohio C 12	-	(WF9 x 07) x (Hy x L317)
Ohio C 28	-	(WF9 x Hy) x (33 x 40B)
Ohio C 38	-	(WF9 x Hy) x (40B x 02)
Ohio C 48	-	(WF9 x Hy) x (40B x Os420)
Ohio K 23	-	(26 x 51) x (65 x 84)
Ohio K 24	-	(51A x WF9) x (33 x 40B)
Ohio K 35	-	(65 x 02) x (26 x Hy)
Ohio M 15	-	(26 x 51) x (A x CC5)
Ohio M 20	-	(26 x 51) x (33 x 40B)
Ohio M 34	-	(26 x 51) x (40B x 02)
Ohio W 10	-	(51A x WF9) x (Hy x L317)
Ohio W 17	-	(56 x 4-8) x (51 x 84)
Ohio W 36	-	(51A x WF9) x (40B x 02)
Ohio W 46	-	(51A x WF9) x (40B x Os420)
Ohio W 54	-	(WF9 x 40B) x (51A x Hy)
U. S. 13	-	(WF9 x 38-11) x (Hy x L317)
3097	-	Pedigree unknown

In addition to these known strains a number of other specimens of seed corn from various sources producing hybrid corn seed were inspected and data on disease collected. These figures were summarized and will be included in this report.

In tabulating the data on hybrid strains samples totalling 1000 seeds or more were used to calculate percentages of germination and fungi present. Samples totalling less than 1000 grains were not considered to be in sufficient numbers for a reasonably accurate calculation.

Table 2. Germination record and fungi on 1943 hybrid seed corn strains

Hybrid Strain	Number of seeds examined	Number of seeds germinating			Number of seeds infected with					
		Strong	Weak	Dead	Asp.	Nig.	Dip.	Fus.	Gib.	Pen.	Total
Iowa 939	17 100	16205	369	526	10	40	65	50	16	346	527
Ohio C 38	10 400	10109	203	88	0	6	15	21	12	164	228
U.S. 13	10 100	9718	184	198	0	10	52	31	28	170	281
Ohio K 24	8 000	7647	172	181	7	44	30	32	12	144	269
Ohio K 35	6 000	5649	116	235	0	32	44	17	18	108	219
Iowa 4059	6 000	5784	112	104	1	1	14	17	24	97	154
Iowa 306	5 600	5296	128	176	7	17	36	14	4	129	207
Ohio M 35	5 500	4968	128	404	0	125	50	27	24	186	412
Ohio K 23	4 600	4400	93	107	1	17	26	16	11	116	187
Ohio M 34	3 900	3778	88	34	0	1	19	1	11	72	104
Ohio W 17	3 400	2895	69	436	1	42	11	5	0	113	172
Ohio M 20	2 700	2548	65	87	0	15	15	11	4	82	127
Ohio W 46	2 600	2530	56	14	0	1	0	4	5	82	92
Ohio W 10	2 400	2322	56	22	0	1	5	5	1	65	77
Ohio W 36	2 300	2232	40	28	1	5	1	5	10	42	64
Ind. 425B	2 000	1901	28	71	0	3	9	6	8	23	49
Ohio C 12	1 600	1559	28	13	0	2	2	10	2	18	34
Ind. 608C	1 500	1468	27	5	0	2	2	1	0	51	56
Ind. C 48	1 500	1425	29	46	0	1	0	18	5	43	67
3097	1 500	1468	28	4	0	0	2	0	1	62	65
Ind. 610	1 300	1257	23	20	0	3	2	1	1	8	15
Ohio W 54	1 300	1132	16	152	0	3	18	4	0	33	58
Ind. 431	1 000	980	19	1	1	0	0	1	0	6	8
Totals	102 300	97271	2077	2952	29	371	418	297	197	2160	3472

In Table 3, the data in Table 2 are expressed as percentages of the total number of seeds examined in each of the 23 hybrids listed in Table 2.

Table 3. Percentage of germination and seeds infected with fungi on 1943 hybrid seed corn strains.

Hybrid strain	Number of seeds examined	Percentage of seeds germinating			Percentage of seeds infected with					
		Strong	Weak	Dead	Asp.	Nig.	Dip.	Fus.	Gib.	Pen.	Total
Iowa 939	17 100	94.76	2.17	3.07	0.06	0.23	0.38	0.29	0.09	2.02	3.07
Ohio C 38	10 400	97.20	1.95	0.85	0.00	0.06	0.14	0.20	0.11	1.58	2.19
U. S. 13	10 100	96.22	1.82	1.96	0.00	0.01	0.51	0.31	0.27	1.68	2.78
Ohio K 24	8 000	95.59	2.15	2.26	0.09	0.55	0.37	0.40	0.15	1.80	3.36
Ohio K 35	6 000	94.15	1.93	3.92	0.00	0.53	0.73	0.28	0.29	1.82	3.65
Iowa 4059	6 000	96.40	1.87	1.73	0.02	0.02	0.23	0.28	0.40	1.62	2.57
Iowa 306	5 600	94.57	2.29	3.14	0.12	0.30	0.65	0.25	0.07	2.31	3.70
Ohio M 15	5 500	90.33	2.32	7.35	0.00	2.27	0.91	0.49	0.44	3.38	7.49
Ohio K 23	4 600	95.65	2.02	2.33	0.02	0.37	0.56	0.35	0.24	2.52	4.06
Ohio M 34	3 900	96.87	2.26	0.87	0.00	0.07	0.49	0.07	0.28	1.85	2.66
Ohio W 17	3 400	85.15	2.03	12.82	0.03	1.24	0.32	0.15	0.00	3.32	5.06
Ohio M 20	2 700	94.37	2.41	3.22	0.00	0.56	0.56	0.41	0.16	3.04	4.70
Ohio W 46	2 600	97.31	2.15	0.54	0.00	0.05	0.00	0.15	0.19	3.05	3.54
Ohio W 10	2 400	96.75	2.33	0.92	0.00	0.04	0.21	0.21	0.04	2.71	3.21
Ohio W 36	2 300	97.04	1.74	1.22	0.04	0.22	0.04	0.22	0.43	1.83	2.78
Ind. 425B	2 000	95.05	1.40	3.55	0.00	0.15	0.45	0.30	0.40	1.15	2.45
Ohio C 12	1 600	97.44	1.75	0.81	0.00	0.12	0.12	0.63	0.12	1.13	2.12
Ind. 608C	1 500	97.87	1.80	0.33	0.00	0.13	0.13	0.87	0.00	3.40	4.73
Ohio C 48	1 500	95.00	1.93	3.07	0.00	0.07	0.00	1.20	0.33	2.87	4.47
3097	1 500	97.87	1.86	0.27	0.00	0.00	0.13	0.00	0.07	4.13	4.33
Ind. 610	1 300	96.69	1.77	1.54	0.00	0.23	0.15	0.08	0.08	0.62	1.16
Ohio W 54	1 300	87.08	1.23	11.69	0.00	0.23	1.38	0.31	0.00	2.54	4.46
Ind. 431	1 000	98.00	1.90	0.10	0.00	0.00	0.00	0.10	0.00	0.60	0.80
Total Averages	102 300	95.08	2.03	2.89	0.03	0.36	0.41	0.29	0.19	2.11	3.39

In addition to the data in Tables 2 and 3, 75 samples of lots of 1943 hybrid seed consisting of less than 1000 seeds or 10 samples were examined. Table 4 gives the averages of all these samples. It is interesting to note that these samples tested higher in germination and freedom from disease than did those listed in Table 2. This is not considered significant since large samples would possibly have reduced these figures.

Table 4. Germination record and fungi present on 75 small lots of 1943 hybrid seed corn.

Small lots of 1943 seed corn	Number of seeds	Percentage
Seeds examined	7500	
Germination strong	7321	96.41
Germination weak	137	1.82
No germination	132	1.77
Fungi present		
Aspergillus sp.	4	0.05
Nigrospora sphaerica	4	0.05
Diplodia zeae	22	0.29
Fusarium moniliforme	26	0.36
Gibberella saubinetii	33	0.44
Penicillium sp.	112	1.49
Fungi totals	201	2.68

A number of hybrid strains grown in the year 1942 and a few grown earlier were examined. Those totalling more than 1000 seeds or 10 samples per strain are listed in Table 5 where data concerning them is summarized.

Table 5. Germination record and fungi on hybrid seed corn of the 1942 and earlier crops.

Hybrid strain	Number of seeds examined	Number of seeds germinated			Number of seeds infected with					
		Strong	Weak	Dead	Asp.	Nig.	Dip.	Fus.	Gib.	Pen.	Total
U. S. 13	4 200	3 948	83	133	1	3	47	12	10	62	135
Ohio C 38	3 000	2 850	46	104	1	11	10	11	1	38	72
Iowa 939	2 700	2 543	44	113	1	2	11	11	2	67	94
Ohio W 17	2 000	1 716	86	198	1	8	22	2	2	15	50
Ind. 425B	1 900	1 803	32	65	0	0	11	2	1	32	46
Ind. 608C	1 600	1 559	30	11	0	0	4	3	0	10	17
Ohio K 24	1 600	1 502	46	52	0	6	19	10	1	19	55
Ohio C 48	1 300	1 158	29	113	0	0	21	3	0	14	38
Ohio C 28	1 200	1 110	22	68	0	4	7	2	0	13	26
Iowa 4059	1 000	947	14	39	0	1	4	4	2	13	24
Ill. 384	1 000	914	22	64	0	0	0	1	1	24	26
Totals	21 500	20 086	454	960	4	35	156	61	20	307	583

In Table 6, the data in Table 5 are expressed as percentages of the total number of seeds examined in each of the 11 hybrids listed in Table 5.

Table 6. Percentage of germination and seeds infected with fungi on hybrid corn strains of the crops of 1942 and earlier.

Hybrid strain	Number of seeds examined	Percentage of seeds germinated			Percentage of seeds infected with						
		Strong	Weak	Dead	Asp.	Nig.	Dip.	Fus.	Gib.	Pen.	Total
U. S. 13	4 200	94.86	1.98	3.16	0.01	0.07	1.12	0.29	0.24	1.48	3.21
Ohio C 38	3 000	95.00	1.53	3.47	0.03	0.37	0.33	0.37	0.03	1.27	2.40
Iowa 939	2 700	94.18	1.63	4.19	0.04	0.07	0.41	0.41	0.07	2.48	3.48
Ohio W 17	2 000	85.80	4.30	9.90	0.05	0.40	1.10	0.10	0.10	0.75	2.50
Ind. 425B	1 900	94.89	1.68	3.43	0.00	0.00	0.58	0.11	0.05	1.68	2.42
Ind. 608C	1 600	97.94	1.88	0.68	0.00	0.00	0.25	0.19	0.00	0.62	1.06
Ohio K 24	1 600	93.87	2.87	3.26	0.00	0.38	1.19	0.63	0.05	1.19	3.44
Ohio C 48	1 300	89.08	2.23	8.69	0.00	0.00	1.62	0.22	0.00	1.08	2.92
Ohio C 28	1 200	92.50	1.83	5.67	0.00	0.33	0.58	0.18	0.00	1.08	2.17
Iowa 4059	1 000	94.70	1.40	3.90	0.00	0.10	0.40	0.40	0.20	1.30	2.40
Ill. 384	1 000	91.40	2.20	6.40	0.00	0.00	0.00	0.10	0.10	2.40	2.60
Total Averages	21 500	93.42	2.11	4.47	0.02	0.16	0.73	0.28	0.09	1.43	2.71

In addition to the Tables 5 and 6, giving data covering the 1942 crop, 84 small lots of seed consisting of less than 10 lots or 1000 seeds per hybrid were examined. There does not appear to be any significant difference in the average germination and amount of fungus infection in these small lots than is shown in the samples listed in Tables 5 and 6. Table 7 gives the data concerning these small lots.

Table 7. Germination record and fungi present on 84 small lots of hybrid seed corn

Small lots of seed corn for 1942 and earlier years	Number of seeds	Percentages
Seeds examined	8 400	
Germination strong	7 826	93.16
Germination weak	155	1.85
No germination	419	4.99
Fungi present		
Aspergillus sp.	2	0.02
Nigrospora sphaerica	31	0.37
Diplodia zeae	65	0.77
Fusarium moniliforme	31	0.37
Gibberella saubinetii	11	0.13
Penicillium sp.	90	1.07
Fungi totals	230	2.73

Included in the samples of corn examined were a number of inbred and single-cross strains used in producing hybrids. A summary of the data on these samples is presented in Table 8.

Table 8. Germination record and fungi averages on 117 lots of inbred and single-cross seed.

Lots of inbred and single-cross seed	Number of seeds	Percentages
Seeds examined	11 700	
Germination strong	10 901	93.17
Germination weak	243	2.08
No germination	556	4.75
Fungi present		
Aspergillus sp.	52	0.44
Nigrospora sphaerica	7	0.05
Diplodia zeae	53	0.45
Fusarium moniliforme	41	0.36
Gibberella saubinetii	22	0.19
Penicillium sp.	354	3.03
Fungi totals	529	4.52

Discussion. An examination of the data presented gives the general impression that hybrid and inbred seed corn both of the 1942 and 1943 crops is of a high quality. The average percentage of strong sprouts in the 1943 crop where more than 1000 seeds were counted is 95.08. As would be expected, it falls slightly below this for the year of 1942 to the figure 93.42%. In 1943, the average number of seeds not sprouting is 2.89%, and for 1942 it is 4.47%. This increase is to be expected since seed corn does gradually lose ability to germinate as the seed ages. Of the fungi producing diseases, Penicillium sp. is present, both in 1942 and 1943 seed, in amounts in excess of all other fungi combined. In the 1943 crop 2.11% of the seeds were infected with Pencillium sp. while the other fungi totalled 1.28%. In the 1942 crop 1.43% of the seeds were infected with Penicillium sp. while the other 5 seed-borne fungi infected only 1.28% of the seeds which is the same amount as for the year 1943.

Among the individual strains represented in the data covering both 1942 and 1943, Ohio C 38, Ohio K 24, Indiana 425B, and Iowa 4059 showed approximately the same amount of disease-producing fungi each year. Other strains such as Ohio W 17, Ohio C 48, and Indiana 608C showed approximately twice as much in the way of seed-borne fungi for 1943 as for 1942. This is somewhat surprising in view of the fact that environmental conditions favoring fungus infection were more nearly optimum in 1942 than in 1943. The total amount of infection is not over 7.49% in any sample and most of the infection is due to Penicillium sp. Of the other fungi no sample showed a percentage higher than 1.38.

The inbred strains show a slightly higher percentage of fungi present, considering the average of all samples examined, than do the hybrid strains. This is to be expected since inbred strains do not have the vigor of hybrid strains. Of the inbred strains tested, 4.52% were infected with 1 of the 6 fungi listed. Of these, 3.03% is due to the presence of Penicillium sp. Other fungi account for 1.49% of the infection in inbred strains tested which is slightly higher than the 1.28% of

hybrids both of the 1942 and 1943 crops.

These data as a whole bear out the conclusion that hybrid seed corn in the state of Ohio for the years 1942 and 1943 was relatively free of disease-producing fungi. A more detailed study of some strains that show the higher percentages of fungus infection would possibly demonstrate a certain amount of susceptibility to some diseases. However, this study, which was made for the purpose of recording the actual amount of disease-producing fungi present on the various hybrids and inbreds of the 1942 and 1943 crops gives conclusive evidence of the excellent quality of the certified seed produced in Ohio during those 2 years.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

REPORTS ON DISEASES OF CEREAL CROPS

CEREAL DISEASES IN SOUTH CAROLINA: The first infection of epiphytotic proportions of rust seen this season was leaf rust of rye [Puccinia rubigo-vera var. secalis] at the Charleston, South Carolina Truck Experiment Station. The rye is in the flowering stage. The first leaf rust of oats (P. coronata) seen this year was also found on the station farm. Leaf rust of wheat is generally absent in the Carolinas, the only occurrences being at Raleigh and Statesville, North Carolina, previously reported. No stem rust has been found.

Powdery mildew [Erysiphe graminis] is generally present on wheat in South Carolina and in some fields is rapidly becoming an important factor in reducing yield.

Septoria tritici was found 100% prevalent on the lower leaves in a field of Redhart wheat near Lockhart, South Carolina. Another species [? S. nodorum] was found equally prevalent and affecting 5 to 10 percent of the leaf surface in a wheat field near Kingstree, South Carolina. A serious leaf spot of rye resembling Scolecotrichum graminis but not the same fungus as previously reported on rye, wheat, oats, and barley, was found near Heath Springs, Lancaster County, South Carolina.

Helminthosporium avenae is present in almost every oat field examined, but in almost all is a very minor factor. Occasionally seen are bacterial leaf spots of wheat, oats, and rye, never in more than trace amounts.

One field of oats near Heath Spring, South Carolina was 90% headed and had 3% smut [Ustilago sp.] by count. -- R. E. Atkinson, Emergency Plant Disease Prevention Project. March 27 - April 1.

DISEASES OF OATS AND WHEAT IN GEORGIA: Several fields of oats were examined in the Thomasville area. No rust was observed. Helminthosporium leaf spot was found scattered in most fields. Loose smut [Ustilago avenae] was also common. From 3 to 5% was observed in one field.

A number of fields of wheat were inspected in the Vienna section. Leaf rust [Puccinia rubigo-vera var. tritici] infections were light. Speckled leaf-blotch (Septoria tritici) and leaf spot (Septoria nodorum) were found in all fields examined. Speckled leaf-blotch was unusually severe in one planting of about 40 acres. -- G. M. Stone, Emergency Plant Disease Prevention Project. April 8.

CEREAL DISEASES IN THE COASTAL BEND AREA OF TEXAS: Pasmo disease (Septoria linicola) has been found on Flax nearing maturity in Nueces, Jim Wells, and Refugio Counties. It appears that the variety Norse is susceptible, and the county agent of Nueces County reports that this variety will not be used extensively another year.

Stem rust (Puccinia graminis) was present on test plantings of Rye at Beeville, Bee County.

Stem rust (Puccinia graminis) and leaf spot (Helminthosporium sativum) were observed on Wheat in test plantings at Beeville, Bee County.

Crown rust (Puccinia coronata) was present on Oats in Bee County. -- George E. Altstatt, Emergency Plant Disease Prevention Project. March 20 - April 5.

BARLEY DISEASES IN CENTRAL CALIFORNIA: Powdery mildew [Erysiphe graminis] was found to be abundant in all fields inspected.

Leaf rust (Puccinia anomala) was observed on volunteer plants in an alfalfa field but no infection was seen in any field of barley.

Loose smut (Ustilago nuda) affecting a few heads was found in one field just beginning to head out. It is yet too early to estimate the percentage of infection.

Scald (Rhynchosporium secalis) was common throughout the area, especially in the older plantings. Heavy infections, some more than 75%, were found in some fields. Many of the lower leaves had been killed. -- Horace L. Barnett, Emergency Plant Disease Prevention Project. Week ending April 1.

DISEASES REPORTED ON LEGUMINOUS FORAGE AND COVER CROPS

ALFALFA CROWN ROT IN KENTUCKY: This survey was made April 4 to 13 in central-eastern Kentucky, driving from Knoxville, Tennessee to Lexington, Covington, and Louisville, Kentucky and back to Knoxville.

Data indicate that crown rot, Sclerotinia trifoliorum, is of minor importance in this section of Kentucky this year. The disease was found in southern Kentucky, none being found in northern Kentucky. None was found on the limited amount of 1943 spring-seeded alfalfa observed and only an occasional trace on older alfalfa. It occurred on the 1943 fall-seeded alfalfa. A trace was found on the little crimson clover seen and a small amount on red clover. Specimens of this disease had been received at the Kentucky Experiment Station but 7 County Agricultural Agents contacted had had no complaints in their counties. Less alfalfa was seeded last year than usual. Wet weather delayed the spring seeding in northern Kentucky until the pressure of other work prevented its being seeded and a severe summer-fall drought largely prevented the fall seeding or delayed its emergence so it was winter killed. -- R. A. Hyre, Emergency Plant Disease Prevention Project.

STEM BLIGHT OF AUSTRIAN WINTER PEAS IN GEORGIA: Several plantings of Austrian Winter Peas were examined in the Vienna area. A high percentage of the plants were found to have a stem blight (between the root crown, or just above, and the soil line). The predominating organism recovered was Sclerotium. -- G. M. Stone, Emergency Plant Disease Prevention Project. April 8.

FORAGE CROP DISEASES IN SOUTH CARCLINA: Urophlyctis trifolii and Olpidium trifolii were found on white clover near Sumter. Entyloma meliloti (white smut) was found on Melilotus indica near Charleston. Powdery mildew [Erysiphe polygoni] is already prevalent on red clover in this area. -- R. E. Atkinson, Emergency Plant Disease Prevention Project. March 27 - April 1.

NEMATODE SURVEY IN GEORGIA

A. L. Taylor

During the period March 27 to April 8, vegetable crops in the vicinity of Thomasville, and wheat and cover crops in the vicinity of Vienna, were examined.

In the Thomasville section, the principal crops at this time are English peas, beans, okra and tomato plants. Wet weather has delayed planting of field crops.

Only a slight trace of infection by the rootknot nematode (Heterodera marioni) could be found in several plantings of English peas examined. No damage due to the rootknot or other nematodes was found, though several fungous and bacterial diseases were common and many plants in low portions of the field had been damaged by excessive water.

The beans examined had all been planted in the last month. On these no trace of rootknot could be found.

Okra fields examined had also been planted recently and were not yet infected by the rootknot nematode.

A total of about 300 acres of Georgia certified tomato plants were examined. The largest plants were about 4 inches high. No rootknot infection was found.

The absence of infection on young plants and the light infection on older ones in this section can be explained by the fact that soil temperatures during the winter months are too low for nematode activity. According to the available information, root penetration does not occur at temperatures lower than 54° F. and other activities are greatly slowed at temperatures in this vicinity. At this latitude, the average soil temperature will be below 54° F. from early December to March.

Wheat fields in the vicinity of Vienna were examined for the wheat nematode, Anguina tritici. At this time, head formation on wheat is well advanced. Only a slight trace of infection could be found in the several fields examined. This was very gratifying, because this nematode was very common in this county a few years ago. One field examined in 1941 had more than 80% infected heads at harvest time. The improvement is due to the efforts of the County Agent, Mr. Fitzpatrick, who traced the source of the infection and instructed the local farmers in control measures.

Cover crops in the vicinity of Vienna were also examined. The principal winter cover crop is Austrian winter peas, and a considerable quantity of blue lupine is also planted. Though Austrian peas are often found to be heavily infected and seriously injured by the rootknot nematode, no

field examined was more than lightly infected and there was no evidence of injury. Blue lupine, which is also a host plant of the rootknot nematode, was not found to be more than lightly infected.

Recommendations. 1. More information about the variations of soil temperature with season and the relations of nematodes and other soil organisms to temperature would be of considerable practical value to scientific workers and farmers.

2. A rootknot-immune winter cover crop would be of great value in this section. If Austrian peas or blue lupine are planted early and allowed to grow late, the increase in nematode population may do much to counteract the increased fertility due to the cover crop.

EMERGENCY PLANT DISEASE PREVENTION PROJECT.

DISTRIBUTION OF THE MEADOW NEMATODE IN VIRGINIA. I. ON BOXWOOD

C. F. Taylor

A considerable amount of time during January, February, and early March has been devoted to a survey of the injury caused by the meadow nematodes, ie. forms of the genus Pratylenchus Filipjev[1]. During these months the symptoms are not expressed on most crop plants. For this reason, most of the samples were collected on boxwoods, Buxus sempervirens. Collections were made on varieties arborescens and suffruticosa.

Samples of roots and soil were taken near the periphery of the dense root system. These samples were packed tightly in paper food containers, moistened slightly if dry, carried to headquarters, and stored in a cold storage room at approximately 35° F. at high humidity. Root samples cared for in this manner yielded meadow nematodes as late as one month after collection.

On boxwood, leaf bronzing symptoms commonly ascribed to the deleterious effects of sun, wind, cold weather, etc., was found associated with root injury of a characteristic nature. Brown to blue-black lesions were abundant on the small roots. The cortical tissue was destroyed in older lesions, frequently this cortical tissue being sloughed and leaving strands of fibrous material as the tips of affected roots. Very small lesions 3 to 5 mm. long frequently yielded upward of 25 nematodes. The older lesions usually did not contain nematodes when examined. Usually on severely bronzed boxwood the root system was injured severely and bore few recent lesions. Collections from boxwood only slightly bronzed were a more productive source of nematodes. Usually collections were made only

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[1] Slide mounts of all nematode-yielding collections have been submitted to Dr. G. Steiner, Nematologist in Charge, Division of Nematology, Bureau of Plant Industry Station, Beltsville, Md. for confirmation. The nematodes were found to belong to two species of Pratylenchus which will be described in a monograph in preparation by Dr. Steiner.

where some plants showed appreciable bronzing.

Root injury typical of that caused by meadow nematodes was found in all collections. As mentioned above, only a few of the very small lesions yielded meadow nematodes in abundance. The older lesions, while suggestive of nematode injury, usually did not contain any meadow nematodes. It should be recognized that failure to find the meadow nematode is not proof that they were not the initial cause of the lesion. Reportedly they migrate from lesions under unfavorable conditions and their absence from this material may have been due to the age of the lesion or to unfavorable seasonable conditions, or, the lesions may have been caused by some other agency.

Nematodes of 2 species of Pratylenchus were obtained in Virginia from boxwood roots collected at intervals from Blacksburg to Suffolk, to Petersburg, to Staunton, and in northern Virginia from the vicinity of Winchester to Warrenton. One collection at Kearneysville, West Virginia also yielded nematodes of this type. Samples have not been collected in other sections of Virginia.

The material examined suggests that much of the "winter injury" on boxwood is traceable to root injury by the meadow nematode. This suggestion was earlier advanced by Dr. G. Steiner in correspondence with Dr. W. A. Jenkins of the Tobacco Experiment Station at Chatham, Virginia during the summer of 1943.

Prior to the initiation of this survey, boxwood material from West Point, Richmond, Trevilians, and Chatham, Virginia had yielded specimens of Pratylenchus on examination at the Division of Nematology, Bureau of Plant Industry Station, Beltsville, Maryland. The data presented in this report extend the known range of the meadow nematode in Virginia to such widely separated points as to render probable the assumption that it is distributed throughout Virginia.

It is planned to collect samples and to attempt to determine extent of injury caused to cereals and to other food crops as early as the season permits symptom expression on such crops.

The leaf-cast fungus (Macrophoma candollei) was collected at several locations. In most instances, only a few plants were affected.

Leaf-miner was collected in one location. Psyllid injury and spider mites were seen more frequently.

EMERGENCY PLANT DISEASE PREVENTION PROJECT.

A SURVEY OF VEGETABLE PLANTS IN WEST VIRGINIA GREENHOUSES

C. F. Taylor

During the week of April 10 to 15, 25 greenhouses in the southwestern and central portions of West Virginia were visited. The tomato plants were examined in each of these houses.

Mosaic (virus) on small plants, 4 to 6 inches in height, was observed on tomatoes in two houses. In one house only two flats of Italian type (for paste production) tomatoes were affected. In the other house almost all of the plants with more than the first two leaves showed mosaic;

the leaves were fern-like, and the plants bore a heavy infestation of aphids. This grower plans to discard all of these older plants and to eradicate the aphids in the hope of obtaining disease-free plants from his later plantings.

In one house used for tomato fruit production, approximately 5% of the plants (Glovel) had been killed during the past few days by Fusarium wilt [Fusarium oxysporum f. lycopersici]. The second cluster was in bloom on these plants. Soil sterilization between crops had been omitted this year.

Tomato tip-blight was not found on any plants observed in the 25 houses; furthermore, no grower reported ever having observed any tomato disease similar to the description of tip-blight.

Wilt-resistant tomato varieties predominated in many greenhouses, in others a wide range of varieties was being produced with little regard for disease resistance. It appeared that more emphasis was placed on wilt-resistant varieties in small towns where plants were sold principally to village and farm gardeners. The same condition was slightly less apparent with cabbage; here some growers reported difficulty in obtaining supplies of yellows-resistant seed. The correlation between wilt-resistant plants and small-town greenhouses was far from perfect, frequent exceptions being found. A contributing factor may have been that several of the city greenhouses had entered the vegetable plant production trade as a war measure and were dealing with a clientele of new and city gardeners who were not familiar with Fusarium wilts. The fact that the agricultural extension program has been directed chiefly at rural areas may account for the higher proportion of resistant varieties in the small town greenhouses.

Most growers used some form of soil sterilization to control damping-off; few reported the use of a seed treatment material. Damping-off was reported only occasionally as causing appreciable loss of plants.

Almost all growers reported that the number of vegetable plants grown in 1944 would represent increases ranging from 10 to 100% over the 1943 production; this despite an acute labor shortage. The current wet weather has curtailed sharply the sale of early cabbage plants. In consequence, the production of later plants is being delayed due to lack of space.
EMERGENCY PLANT DISEASE PREVENTION PROJECT:

OTHER REPORTS ON GREENHOUSE VEGETABLE DISEASES

VEGETABLE DISEASES OBSERVED IN GREENHOUSE AND HOT AND COLD BEDS IN KENTUCKY: Six greenhouse and 10 hot-or cold-frame establishments were observed near Lexington, Covington, and Louisville. In the greenhouses 6% of severe mosaic (virus), including the yellow strains, occurred in 4 houses of Marglobe and Break O'Day tomatoes in the first blossom cluster stage. More mild mosaic was present.

In another 2 houses slightly less than 1% of gray mold (Botrytis sp.) occurred on Bibb lettuce.

In the hot-beds and cold-frames seen drop (Sclerotinia sclerotiorum) was the most severe disease encountered. At Louisville the loss was about 10% in 12 100-foot beds, with 40% loss in the worst bed. The disease affected about 1% of the cabbage plants at this location. From 1 to 4% drop

on Bibb lettuce was found at 2 other establishments. This disease was present, also, on cabbage seedlings.

The next most important disease found was wire-stem, Rhizoctonia solani. It was present on about 10 to 15% of the cabbage seedlings on an 80-foot bed at Shively. At a second location about 200 cabbage seedlings damped-off or had wire-stem and the replanting was lost. Small amounts were found on sweet pepper and cauliflower.

A small amount of gray mold was present on Bibb lettuce in the cold-frames.

The soil usually was not treated and sometimes was changed every 5 to 10 years and sometimes not. Usually the seed was not treated by the grower. -- R. A. Hyre, Emergency Plant Disease Prevention Project. April 4-13.

DISEASES IN COLORADO GREENHOUSES AND HOTBEDS: Tomatoes grown in greenhouses in the vicinity of Denver were inspected on April 6 and 7. Twenty-five ranges were inspected. In 10 ranges approximately 30% of the plants were infected with mosaic (virus), while in the remaining 15 only a trace of mosaic infection was recorded. Only a few plants in the 25 ranges inspected were affected with the spotted wilt virus and these plants were removed. A trace of infection by leaf mold (Cladosporium fulvum) was noted.

Cabbage and celery plants growing in hot-beds in the vicinity of Denver appeared to be in good condition. Some reduction in stands due to damping-off (Pythium debaryanum) was noted. -- E. W. Bodine, Emergency Plant Disease Prevention Project.

REPORTS ON LATE BLIGHT AND OTHER DISEASES OF POTATO, TOMATO, AND PEPPERS

SOUTH CAROLINA: Most of the period from April 3 to 8 was spent in Charleston and Beaufort Counties of South Carolina. The excess rain last month, which delayed farming operations throughout both Carolinas, resulted in disastrous losses in the truck-growing areas. Last week frost damaged what was left of the potato crop and killed most of the early beans and tomatoes. The potato crop has been particularly hard hit by the heavy rains. Two-thirds to 3/4 of the first plantings were lost. Replanted fields fared almost as badly, when the rains continued. Because of the lateness of the season no replanting is being done at present. Fields with poor stands are being prepared for cucumbers, and some have been planted to beans. Growers estimate the acreage lost in excess of 50% of the acreage planted.

In addition, last week's low temperatures killed potatoes to the ground in many fields. Growers say potatoes do not fully recover when they are frozen back, which is contrary to the experiences of growers in North Carolina.

Although most of the losses in low places can be attributed to drowning, the missing hills are locally called "seed piece decay". Corking-over the cut seed piece did not prevent the rot. All of the potato plants are spindly and look like tomato plants. This condition is no doubt due to seed piece decay. --R. E. Atkinson, Emergency Plant Disease Prevention Project.

SOUTHERN FLORIDA: During the week ending April 8, a general survey of plant diseases in all Southern Florida areas was made. Late blight (Phytophthora infestans) has done and is doing great damage to both potatoes and tomatoes in these Southern Florida districts. On the East Glade soils of the Homestead district, and on the muck soils south of Lake Okeechobee late blight was serious on tomatoes as well as potatoes. However, early blight (Alternaria solani) is the most important limiting factor in all areas in Southern Florida. More effective fungicides for this disease are badly needed.

Wide variations in cultural practices in the different producing areas of Southern Florida affect both the prevalence and severity of many common diseases of tomato. Mosaic (virus) is common and destructive in Manatee and Hillsborough Counties, where tomatoes are cultivated, pruned, and staked. In the far southern areas of Dade and Collier Counties, where tomatoes are neither cultivated, staked, nor pruned, mosaic is rare and quite a minor disease.

Mosaic of peppers is a serious limiting factor in the West Coast producing areas, some fields surveyed showing 100% infection. In the East Glades area in Dade County mosaic of pepper was rarely seen, even on early fall planted fields.

Fusarium blight [Fusarium oxysporum f. lycopersici] is widespread and destructive in the Manatee-Hillsborough area, where tomatoes are cultivated intensively, and much of the land has produced many crops. In southern Collier County, where new land is used for each crop, Fusarium blight is uncommon. This disease of tomatoes is universally distributed, but much more serious in the Manatee-Hillsborough area. This latter area suffers from a combination of early blight, mosaic, and Fusarium blight on tomatoes. Some areas will be abandoned and others will produce only one cluster of marketable fruits. Reliable authorities estimate not above 50% of a normal crop of tomatoes in this West Coast area.

Late blight has been serious on potatoes in all areas surveyed. Just why it should also spread to tomatoes in some districts, and not in others, is not clear, unless we have different strains of the late blight fungus, some of which are adapted to tomato. -- C. M. Slagg, Emergency Plant Disease Prevention Project.

LOUISIANA: Surveys during the period April 4 to 10 were made in the southern Parishes of Louisiana. In Terrebonne and LaFourche Parishes harvest of potatoes had already begun. Rugose mosaic (virus) was again found in these Parishes, particularly in fields planted with Nebraska seed. In the 10 or so large fields surveyed the percentage of infected plants varied from a trace to well over 5. Mild mosaic, in small amounts, was also found in these same fields. In one large field of several acres in LaFourche Parish, near Thibodaux, over 20% of the plants were affected by hairy sprout [physiogenic].

Late blight (Phytophthora infestans) was found in several adjoining fields below Lockport (lower LaFourche Parish). Considerable damage had been done in an area of several acres.

The Parish Agents in these 2 Parishes estimated that 15% of the potato plants were killed by a freeze that occurred about 2 weeks ago. It was

interesting to note that a difference in elevation of less than one foot made considerable difference in the amount of injury. At the lower elevations plants were killed back several inches while on plants on ground only a few inches higher only some of the upper leaves were injured. The area of greatest damage was in the triangle between Houma, Thibodaux, and Raceland. -- Douglas C. Bain, Emergency Plant Disease Prevention Project.

DISEASES OF OTHER VEGETABLES IN VARIOUS TRUCK CROP AREAS

VEGETABLE DISEASES IN SOUTH CAROLINA: Most of the week ending April 8 was spent in Charleston and Beaufort counties of South Carolina. The excess rain last month, which delayed farming operations throughout the Carolinas, resulted in disastrous losses in the truck growing areas. Last week frost damaged what was left of the potato crop and killed most of the early beans and tomatoes. In the Holly Hill area early peas, about a week from harvest, were also severely damaged.

Lettuce Diseases - Most of the lettuce is grown by large growers who plant up to 100 acres of this crop. The most prevalent disease is mosaic which varies from 3 to 33% infection. The average is from 15 to 20%. After the frost of April 6 the infected plants were very easy to spot, for diseased plants are notoriously more susceptible to cold injury. Although not all cold injured plants were diseased, practically all diseased plants were cold damaged.

If this disease is carried by the seed, then mosaic free seed are badly needed to prevent this unnecessary loss. It would appear that rogueing by seed producers would solve this problem. Less than 1% mosaic appears in the young seedlings but it is difficult if not impossible to eliminate these plants in a thickly planted seed bed.

Apparently the time of planting the seed bed affects the amount of infection. One grower has noticed for several years that fields set from seed beds planted in November have more mosaic than from those planted in December. This year the early planted had 20%, the late planted only 3% mosaic infection.

Septoria leaf spot was found in old seed beds at the Truck Station and drop (Sclerotinia sclerotiorum) was present in trace amounts in several fields.

Beans - One grower, visited with Dr. C. N. Clayton, had 42 acres of beans, all infected with anthracnose (Colletotrichum lindemunthianum). The amount of infection varied in different areas of the fields, probably because the infection was spread to some extent by surface water. The prevalence and severity was the worst the writer has ever seen in beans in the seedling stage. Prevalence was estimated at 80%, with about 10% of the plants killed, girdled by stem lesions. Damage was 100%, I suppose, as the grower was advised to plow up the entire acreage. Perhaps more damage will result for disease-free seed were interplanted between the rows of infected plants which were to be disked up.

Cabbage - Cabbage yields will be but a fraction of that of former years, chiefly because of the great amount of shooting seed stalks. The excess

cold also resulted in loose and misshapen heads. Most of the cabbage fields are being plowed up; some of them look like flower gardens. No grower as far as known has attempted to recoup losses by harvesting seed.

The effect of excess water on the cabbage crop is colorful. All varieties look like red cabbage. What causes this phenomenon is not known. The role root rot plays under these conditions is probably great.

Peas - Peas have the typical pale yellow color they take on when flooded. Stands are very poor; most of the missing plants were killed after emergence by a canker at the ground line. Dr. Shanor has isolated Fusarium sp. from these cankers. Mosaic and Ascochyta leaf and stem spot were seen in trace amounts.

The frost damaged all exposed pods and flowers, in the Holly Hill area where the crop was about one week from harvest. Of course late plantings which had not bloomed were not damaged.

Miscellaneous Crops - Beets are dwarfed and brilliant red. According to one grower "they have had their roots rotted off three time so far". Spinach is also stunted and many plants show root rot symptoms. Leaf spot (Heterosporium variabile) is present in old plantings. Beet leaf spot (Cercospora beticola) is common. -- R. E. Atkinson, Emergency Plant Disease Prevention Project.

DISEASES OF PEAS AND BEANS IN GEORGIA:

Peas - Seven hundred to a thousand acres of "garden" or "English" peas are planted in the Cairo section for canning. A number of fields were examined for disease just prior to harvest. Disease varied in intensity from field to field. Bacterial blight [Pseudomonas pisi] and downy mildew [Peronospora pisi] were found in all fields. Root rot complications (Rhizoctonia and Ascochyta pisi) were also common. Disease losses were slight except in about 200 acres where nearly 100% of the plants were affected by root rot. Bacterial blight was also severe, but downy mildew, although present, seemed to be somewhat in the background. Growth was poor, not more than 10 inches, and the reduction in yield was estimated at 40 to 50%.

Green Beans - A number of early spring plantings of beans were observed in the Thomasville area. Except for about 3 to 5% damping-off, no diseases were noted. -- G. M. Stone, Emergency Plant Disease Prevention Project. Week ending April 8.

LETTUCE AND ESCARCLE DISEASES IN SOUTHERN FLORIDA: During the week ending April 8 a general survey of plant diseases in all southern Florida areas was made. Rhizoctonia [solani] and downy mildew (Bremia lactucae) were found to be destructive on lettuce in the Everglades muck soils. Mosaic (virus) is common on lettuce along the West Coast. Considerable damage was caused by nematodes [presumably Heterodera marioni] in the East Glade area.

During the week ending April 1 several fields of spring escarole in the Ruskin area were seen where the amount of mosaic (virus) was 5% or more.-- C. M. Slagg, Emergency Plant Disease Prevention Project.

VEGETABLE DISEASES IN SOUTHERN LOUISIANA: Surveys the week ending April 10 were made in the southern Parishes of Louisiana. Spring vegetables such as potatoes, beans, tomatoes, pepper, eggplant, and corn are getting pretty well along at this time.

Broad Bean (Vicia faba) - This is mainly a small garden crop, however, a few large acreages are grown in St. Bernard and Plaquemines Parishes. In one field of about 6 acres, over 90% of the plants showed mosaic (virus). It was estimated that over 30% of the infection was primary since these plants were quite stunted and produced no fruit, and all of the leaves showed the disease. Production of beans in this one field was considerably reduced. The disease was also very common in all of the fields, large and small, that were seen. An undetermined leaf spot was found to be very common in this same area. Rust (Uromyces fabae) is beginning to show on the leaves.

Onion, Shallot and Garlic - Downy mildew (Peronospora destructor) on onion was found in a small area in LaFourche Parish, the first seen this year. A small amount of pink root (Phoma terrestris) was found in the same field. This disease is not so common or severe west of the River as it is on the eastern side. Southern wilt (Sclerotium rolfsii) was found on several shallots in a large planting near New Orleans (St. Charles Parish). The disease occurred at soil level and was rotting the neck of the plants. Purple blotch (Macrosporium [Alternaria] porri) had increased on garlic in the vicinity of Thibodaux (LaFourche Parish). Mosaic on garlic in this area (Southern Louisiana) is the rule; healthy plants are apparently rare. A few apparently healthy plants were seen in a small planting near Thibodaux.

Turnip - White leaf spot (Cercosporella albo-maculans) was found to be very common in large acreages near LaPlace, St. John Parish.

Bean - Severe damage was caused by frost about 2 weeks ago in Terrebonne and upper LaFourche Parishes. -- Douglas C. Bain, Emergency Plant Disease Prevention Project.

ONION AND SPINACH DISEASES IN THE COASTAL BEND AREA OF TEXAS: Onion "blight" (undetermined) still prevails throughout this area. In the easternmost portion of the Coastal Bend, it appears that excessive rainfall has been the primary cause. In the central area, the blight appears to be due to a combination of wet and cloudy weather, coupled with purple blotch (Macrosporium [Alternaria] porri). Purple blotch is also present in the Floresville district (Wilson County).

Albugo occidentalis (white rust) is still abundant on spinach in the Coastal Bend. -- George E. Altstatt, Emergency Plant Disease Prevention Project. March 20 - April 5.

LETTUCE DISEASES IN THE YUMA VALLEY, YUMA, ARIZONA: Approximately 10,000 acres of lettuce were seeded in the Yuma Valley of Arizona, during the fall of 1943. A portion of this acreage will be used for a seed crop. Many lettuce fields throughout the valley were visited during the third week of March, 1944, and the few diseases present were causing but very slight losses. Sclerotinia sclerotiorum was observed in many plantings but never causing more than very slight damage. The same may be said of big vein (virus). A very slight amount of bacterial soft rot (Erwinia carotovora) was present in one planting. A cutworm was responsible for

very slight damage in a majority of the plantings. The scarcity of diseases combined with a favorable climate appear to make this region a promising one for the production of lettuce seed. -- William G. Hoyman, Emergency Plant Disease Prevention Project.

VEGETABLE DISEASES IN CENTRAL CALIFORNIA: During the week ending April 1 a survey was made of vegetable diseases in the Salinas Valley and in the Watsonville area in Santa Cruz County. The principal crops observed in these areas at this time were lettuce of all ages, young crucifers, peas and young spinach. Some fields were being seeded and there was still considerable acreage of bare soil. A few fields of crucifers were still being harvested. The crops in the vicinity of Watsonville were noticeably later than those in the Salinas Valley.

Lettuce - Big vein (virus) was common in the vicinity of Salinas and was found in almost all fields where the plants were of any size. Counts of these plants showed that the percentage of big vein ranged from a trace to 25% in the different fields.

Only a trace of downy mildew (Bremia lactucae), drop (Sclerotinia sclerotiorum) and gray mold rot (Botrytis cinerea) were found in these areas. None of these diseases were important at this time.

Cabbage - Only a trace of downy mildew (Peronospora parasitica) was found on the young crucifer plants in the field. This was apparently a carry-over from the plant beds and did not seem to be spreading in the field.

Root rot (Phytophthora megasperma) was observed in a low wet area at the end of a field of young cabbage. Most of the plants in approximately one-half acre were diseased.

Parsnip (for seed) - Aster yellows (virus) affected approximately 8% of the plants in a one-acre field. -- Horace L. Barnett, Emergency Plant Disease Prevention Project.

DISEASES OF FRUITS AND VEGETABLES OBSERVED ON THE BOSTON MARKET

R. C. Cassell

A collection of diseased fruits and vegetables was made the third week of March on the Boston market. The origin of each specimen could not be accurately determined at the time but the collection was made from produce presumably shipped from the Southern States, California, and Mexico, except for the Prince Edward Island rutabagas. Most shipments were coming in relatively free from diseases at this time. The Boston marketing inspectors report that there was much less diseased material being received in March than in January and early February.

Most of the identifications were made by cultures in Amherst, but some were made by spore identification in Boston. Appreciation is extended to Dr. Thomas Sproston Jr. of Massachusetts State College for aid in identifications, and to Mr. Gill Irish, Marketing Specialist, for providing working facilities in Boston.

Host	Organism	Number of Identifications
Green pepper	- Fruit rot (Alternaria sp.)	9
	- Bacterial spot (Bacterium sp.)	3
	- Ramularia sp.	5
Squash	- Botrytis rot (B. cinerea)	8
	- Alternaria rot (Alternaria sp.)	3
	- Rhizopus rot (R. nigricans)	2
	- Fusarium rot (Fusarium sp.)	2
	- Bacterial rot (Bacterium sp.)	1
	- Mucor sp.	1
	- Penicillium sp.	1
Tomato	- Fruit spot (Alternaria sp. probably A. solani)	13
	- Phoma rot (Phoma destructiva)	6
	- Nailhead (Alternaria tomato)	3
	- Anthracnose (Colletotrichum phomoides)	2
	- Botrytis rot (Botrytis sp.)	1
	- Ramularia sp.	4
	- Rhizopus sp.	1
	- Fusarium sp.	2
Carrot	- Water soft rot (Sclerotinia sclerotiorum)	6
	- Gray mold rot (Botrytis sp.)	4
	- Cladosporium sp. (probably C. herbarum)	2
	- Penicillium sp.	1
Rutabaga	- Black leg (Phoma lingam)	10
Orange	- Melanose (Phomopsis citri)	4
	- Green mold (Penicillium digitatum)	3
Lemon	- Green mold (Penicillium digitatum)	3
Grapefruit	- Green mold (Penicillium digitatum)	2

EMERGENCY PLANT DISEASE PREVENTION PROJECT

REPORTS OF POTATO STORAGE DISEASES

CONDITION OF VERMONT POTATOES IN COMMERCIAL STORAGE APRIL 7: The 6 commercial potato storage houses in Bellows Falls, Guildhall, Greensboro Bend, Hardwick, East Hardwick, and Morrisville were visited the first week of April. Another house was also included in the trip just across the river from Bellows Falls in Walpole, New Hampshire.

Throughout the area covered in this report storage shrinkage has, in general, been much greater than is expected in an average year. Consider-

ing New England as an area the shrinkage of potatoes in Vermont storages lies between the very small loss column of the Connecticut-Rhode Island area and the considerably larger loss column of the state of Maine. Comparatively speaking however, the Vermont conditions more nearly approach the Maine conditions than those of Southern New England.

In Vermont 75% of the storage loss can probably be attributed to late blight (Phytophthora infestans) bin rot and associated complications. In addition to late blight rot, followed in some cases by bin heating and bacterial rots, the only other important causes of loss are net necrosis (leaf-roll virus) and stem-end browning (cause unknown) in the Green Mountains, and hollow heart (non-parasitic) in almost all varieties.

Some of the Vermont storages have suffered the greatest losses from late blight this year that they have ever experienced. Some bins of 20,000 to 22,000 bushel size have suffered 25% to 80% loss. Other bins have stood up extremely well and suffered no greater shrinkages than in a normal year. Hollow heart has averaged as high as 20% in some bins and net necrosis has ranged from 0.5% to 18% in the Green Mountains. Net necrosis has apparently been worse this year than usual. At one location ring rot (Corynebacterium sepedonicum) was the cause of some loss. In most localities potatoes tended to be "over-sized" this year. "Bulls" had to be contended with from many fields and in one lot encountered averaged as high as 20%.

Conclusions drawn from the opinions of the growers and dealers seen is that the loss from shrinkage in the commercial houses this year averages about 18%, or approximately twice as great as in a normal year. Most dealers have about one-third of their potatoes still on hand. However, these are mostly certified seed potatoes which have been contracted for at a higher price than is now being quoted for such seed. Providing these contracts are generally respected, the potato men of Vermont stand a good chance of disposing of their 1943 crop in a fairly satisfactory manner.--Robert C. Cassell, Emergency Plant Disease Prevention Project.

A SURVEY OF STORED POTATOES IN WEST VIRGINIA: During the period February 15 to 18, the writer accompanied Mr. Waldo Craig, State Entomologist, on an inspection trip of home-grown stored potatoes. Four lots examined had been entered for inspection as War Approved seed, while 5 other lots were examined at the request of County Agricultural Agents.

Bacterial ring rot (Corynebacterium sepedonicum) was found in 3 of the 9 lots, one lot entered for inspection being rejected for this cause.

Late blight (Phytophthora infestans) was found in 2 lots entered for inspection. In one lot a trace was found. In the other lot approximately 16% of the tubers bore small lesions. These lesions were very small and so difficult to detect that the grower found it impractical to market these tubers as War Approved seed.

Fusarium stem-end browning and purple top wilt (virus?) were found in most of the lots, the highest count being 15 and 11% respectively in one lot.

Scab (Actinomyces sp.) was found as at least a trace in all lots, the highest counts being 10, 15, 20, and 100%.

Rhizoctonia solani and silver scurf (Spondylocladium atrovirens) were found as a trace in several lots of tubers.

Comparatively few potatoes are stored in West Virginia. In most years fall prices are such that growers tend to move their potatoes directly from field to market. -- C. F. Taylor, Emergency Plant Disease Plant Disease Prevention Project.

STORAGE DISEASES OF POTATOES IN COLORADO: Several truck loads of potatoes being graded for commercial use were inspected at Lucerne. In one truck 50% of the tubers were infected with late blight (Phytophthora infestans), while none was found in the other loads. Other organisms found in small amounts in all the loads inspected were Rhizoctonia solani, Alternaria solani, Fusarium trichothecioides, and Corynebacterium sepedonicum. -- E. W. Bodine, Emergency Plant Disease Prevention Project.

REPORTS ON DISEASES OF FRUIT CROPS

DEVELOPMENT OF THE APPLE SCAB FUNGUS IN THE HUDSON VALLEY OF NEW YORK: Observations indicate the following stages of Venturia inaequalis development on stated dates on McIntosh leaves.

Date	Location	Pre-ascus	Early ascus	Delimited spores	Colored spores 10%	25%	50%	Discharged in Laboratory	Discharged Outside
3/18	Milton	86%	14%	0	0	0	0	0	0
4/12	Poughkeepsie	15	25	37	11	5	7	3	0
4/14	Milton	3	41	21	12	6	5	2	0
4/15	Warwick	0	0	20	15	25	40	20	0

Small number of perithecia examined

A light discharge of spores is expected with the next rain period of sufficient length to wet the leaves well. McIntosh flower buds are far enough advanced in the southern sections on April 15 to become infected. In northern sections little green tissue is exposed. The scab carry-over is much greater this year than usual so growers should be advised to keep susceptible varieties well protected beginning with the delayed dormant application. In orchards where scab has been difficult to control higher concentrations of wettable sulfur may be advisable in the pre-bloom applications. -- D. H. Palmiter, New York State College of Agriculture Weekly News Letter, April 17.

SPORULATION OF APPLE-CEDAR RUST IN WEST VIRGINIA: At Charleston on April 13, telial horns of Gymnosporangium juniperi-virginianae on cedars in a nursery were fully extruded and appeared to have discharged spores during the preceding night. -- C. F. Taylor, Emergency Plant Disease Prevention Project.

SOME REPORTS ON DISEASES OF ORNAMENTALS

GREENHOUSE DISEASES OF ORNAMENTALS IN WEST VIRGINIA: During the week of April 10 to 15 greenhouses in the southwestern and central portions of West Virginia were visited. Powdery mildew (Sphaerotheca humuli) was observed on roses in one house. Carnation rust (Uromyces caryophyllinus) was prevalent in another house. Snapdragon rust (Puccinia antirrhini) was not observed on this trip. In an earlier survey trip, during March, however, a severe epiphytotic of snapdragon rust was observed in one greenhouse near Martinsburg. The environmental conditions in this small house favored the disease. -- C. F. Taylor, Emergency Plant Disease Prevention Project.

ROSE DISEASES IN THE COASTAL BEND AREA OF TEXAS: Black spot (Diplocarpon rosae) and Cercospora leaf spot (C. rosigena) are prominent on home-garden roses. Leaf rust (Phragmidium sp.) was first observed on roses in this area April 5. -- George E. Altstatt, Emergency Plant Disease Prevention Project. March 20 - April 5.

DISEASES OF ORNAMENTALS IN COLORADO GREENHOUSES: Greenhouses in the vicinity of Denver were inspected April 6 and 7. In one greenhouse which was planted to snapdragons, several plants were affected with a physiological tip blight and 1% of the plants were affected with a root rot disease as yet undetermined. In 2 ranges planted to sweet peas, 100% of the plants were affected with root rot (Fusarium solani var. martii). In the same greenhouse, several beds were planted to stocks and approximately 3% of these plants were infected by a root rot (Rhizoctonia solani).-- E. W. Bodine, Emergency Plant Disease Prevention Project.

BRIEF NOTES ON PLANT DISEASES

PHYTOPHTHORA MEGASPERMA ROOT ROT OF SPINACH IN NORTH CAROLINA: The first record of Phytophthora megasperma Drechs. being responsible for a root rot disease of spinach has been reported recently by Barnett (PDR 28:320) from an infected area near Salinas, California. Another occurrence of this disease has been recognized also from the trucking area near Wilmington, North Carolina. On February 3, 1944, Dr. R. E. Atkinson sent diseased spinach plants with root rot symptoms to the laboratory at Beltsville, Maryland for diagnosis. The condition of the field from which these samples were taken, the amount of damage present, and the symptoms of affected plants were described briefly by Dr. Atkinson (PDR 28:124). From all of the infected plants submitted, Phytophthora megasperma has been isolated. This second report of P. megasperma root rot of spinach comes from an area where this organism was not previously known to occur. In California, on the other hand, it has been known for some years to damage cruciferous crops seriously when conditions for its development are favorable. -- Leland Shanor, Emergency Plant Disease Prevention Project.

CONDITION OF COTTON IN THE COASTAL BEND AREA OF TEXAS: While cotton was up to an unusually good stand, there was a trace of damping-off which appeared to be due to Rhizoctonia principally. Frost the night of March 29 set back young cotton seedlings severely in this area. Thick stands probably will recover, but in many areas replanting will be necessary. -- George E. Altstatt, Emergency Plant Disease Prevention Project. March 20 - April 5.

MARCH WEATHER

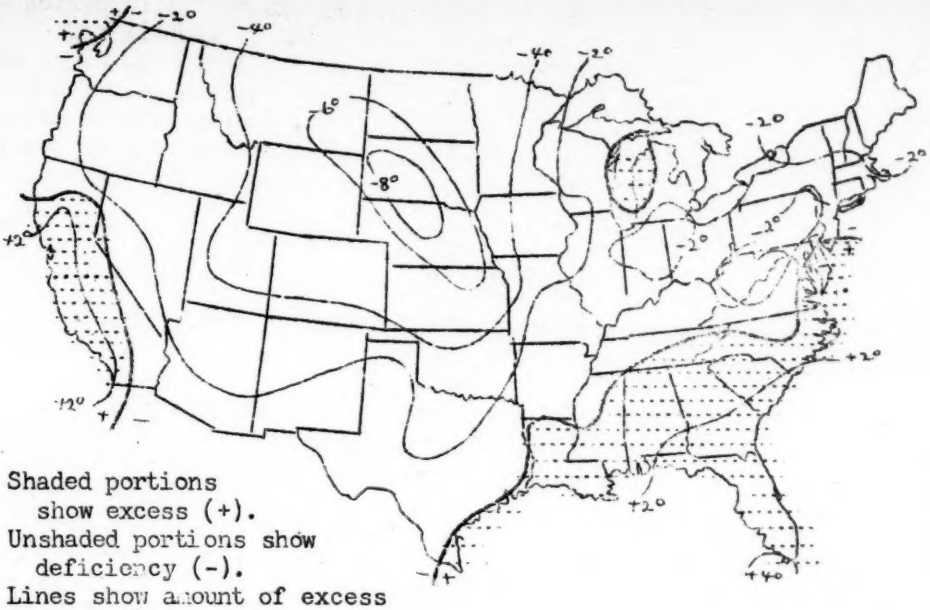
(From U. S. Department of Commerce, Weather Bureau, Weekly Weather and Crop Bulletin for week ending April 4).

As shown by Maps 1 and 2, March was cool and wet over the greater portion of the country. This month last year was also wet in most sections but, in general, was warmer than normal except in the Northeast and far Southwest.

Map 1 shows that the monthly mean temperatures were slightly above normal in the Southeastern States and the southern half of the Pacific area, but were subnormal in nearly all other sections of the country, decidedly so in central and northern districts between the Mississippi River and Rocky Mountains where the minus anomalies ranged generally from 4° to 10°. In the Southeast the month was 1° to 4° warmer than normal and in Central and Northern States east of the Mississippi River the minus temperature departures were of like magnitude.

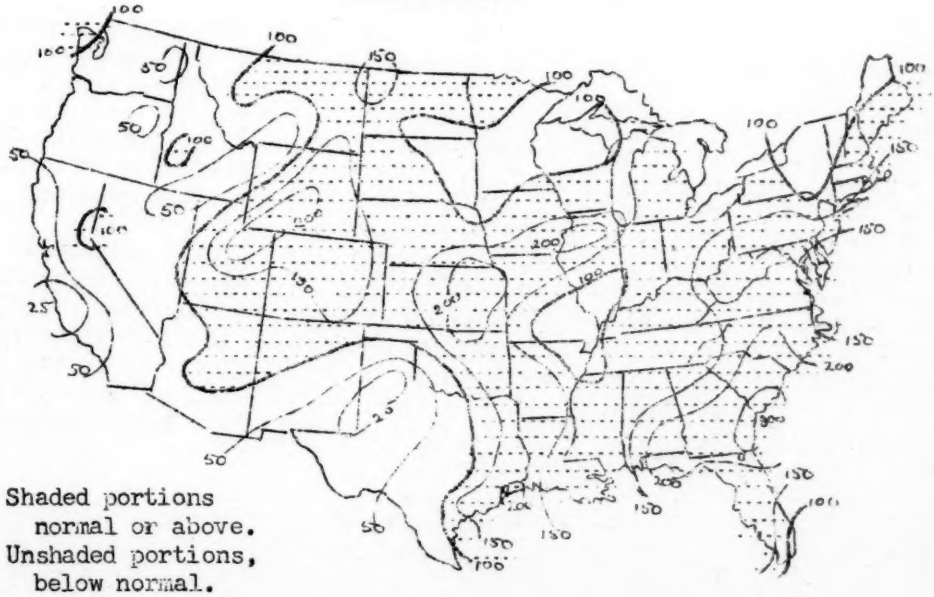
Map 2 shows that, except in a few relatively small areas, precipitation was abnormally heavy from the Rocky Mountains eastward. The month was unusually wet in the Atlantic area, especially in southern sections, the central and east Gulf and central Rocky Mountain States, and in a belt extending from central Kansas and northern Oklahoma northeastward to the Lake region. Some localities in the south Atlantic States had more than 3 times the March normal and more than twice the normal were reported from a good many stations in other wet areas.

On the other hand, the falls were extremely scanty in the Southwest, especially western Texas and eastern New Mexico, and also in the Pacific States where some areas had less than half the normal. As frequently occur, the delineations between the areas of very heavy and very light rain were often sharply drawn, such as Dallas, Tex., 145 percent of normal and nearby Fort Worth, 56 percent; New York City, 182 percent and Scranton, Pa., 83 percent; Oklahoma City, 193 percent and Amarillo, Tex., practically no rain during the entire month.



Shaded portions show excess (+).
Unshaded portions show deficiency (-).
Lines show amount of excess or deficiency.

Map. I - Departure of mean temperature from the normal, for March 1944.



Shaded portions normal or above.
Unshaded portions, below normal.

Map. II - Percentage of normal precipitation, for March 1944.